REVISED 11/09

LSUE COURSE SYLLABUS

I.	PHYS 2002	Instructor: Michael Scanlan

II.	Course description from the current LSUE catalog:

General Physics Lec. 3; Cr. 3.
For pre-medical and non-professional science students. Credit will not be given for this course and Physics 2102. The study of mechanics, heat, sound, and light.
Prerequisite: Physics 2001

III.	Textbook(s) and other required materials:

College Physics, 8th ed. by Serway and Vuille, Brooks Cole Publisher.

IV.	Evaluation/grading (policy and basis; number and frequency of tests and papers; weights of particular tests or papers; etc.):

During a semester, homework, three one hour exams (each worth 100 points) and one two hour comprehensive final exam (worth 200 points) will be given. Homework will be completed online via WebAssign.

Homework will not be accepted late. Make-up exams will not be scheduled. If an exam is anticipated to be missed with an excused absence, the student may take the exam BEFORE it is given to the class, otherwise, the final exam grade will be substituted for the missed exam.

V.	Course objectives:

A. Develop an understanding of the inner workings of the physical systems.
B. Study physics laws and observe how they are connected to the physical systems mentioned in A.
C. Use of "logical deduction" in identifying cause and effects.
D. Study the connection between mathematics and the physical systems with algebra and Trigonometry as the Tools.
E. Relate A, B, C, D to the real life problems. A good portion of the application of physics is in areas of biological sciences.

VII.	Brief summary of course content by major units of instruction:

A. Electrostatics

1. Charges
2. Coulomb's Law
3. Insulators and Conductors
4. Charging by Induction and Conduction
5. Electric Field
6. Potential Difference
7. Work and Electric Potential Energy
8. Batteries as sources of Potential Difference
9. Absolute Potentials
10. Capacitors
11. Dielectrics

B. Circuit Elements
1. Electric Current
2. Ohm's Law
3. Resistivity
4. Power and Electrical Heating
5. Kirchhoff's Rules
6. Resistors in Series and Parallel
7. Capacitors in Series and Parallel
8. Ammeters and Voltmeters
9. House Circuits
10. Electrical Safety
11. The Potentiometer

C. Magnetism
1. Magnetic Fields
2. Force on a Current in a Magnetic Field
3. The Right-Hand Rule
4. Forces on Moving Charges
5. Lines of Flux
6. Ampere's Law and the Computation of B
7. Solenoid
8. Toroid
9. Ampere's Theory Magnets
10. Moving-Coil Meters
11. Induced EMF's
12. Mutual and Self-Induction
13. Energy in Magnetic Fields
14. AC Generator
15. Motors
16. Transformers

D. Alternating Currents and Electronics
1. AC Quantities; RMS Values
2. Resistance, Capacitance, and Inductance Circuits
3. LCR Circuit
4. Electrical Resonance
5. Thermionic Emission

E. Electromagnetic
   1. Marwell's Equations
   2. Generation of EM Waves
   3. Reception of Radio Waves
   4. Electromagnetic Wave Spectrum
   5. Energy Carried by EM Waves

F Properties of Light
   1. Concept of Light
   2. Reflection
   3. Mirror Equation
   4. Refraction
   5. Ray Diagrams for Thin Lenses
   6. Thin-Lens Formula
   7. Combination of Lenses

G. Optical Devices
   1. The Eye
   2. The Simple Camera
   3. Diopter Units
   4. Magnifying Glass
   5. Microscope
   6. Astronomical Telescope
   7. Prism Spectroscope
   8. Polarized Light

H. Interference and Diffraction
   1. Huygens' Principle and Diffraction
   2. Interence
   3. Young's Double-Slit Experiment
   4. Coherent Waves and Sources
   5. Michelson's Interferometer
   6. Diffraction

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I. Modern Physics
   1. Postulates of Relativity
   2. Time Dilation
   3. Length Contraction
   4. Relativistic Mass-Energy Relation
   5. Planck's Discovery
   6. The Comptom Effect
   7. Momentum of the Photon
   8. Particle Waves
   9. Uncertainty Principle
   10. Quantum Mechanics
   11. The Electron Microscope

J. Atomic Structure and the Emission of Light
   1. Nuclear Atom
   2. Spectrum of Hydrogen

3. Bohr Atom
4. Energy-Level Diagrams
5. Resonance of Waves in Atoms
6. Quantum Numbers and the Pauli Exclusion Principle
7. Periodic Table
8. The Laser

K. The Atomic Nucleus
1. Structure of the Nucleus
2. Isotopes
3. Mass Defect and Binding Energy
4. Radioactivity
5. Nuclear Reactors
6. Fusion Reaction
7. Radiation: Effects and Detection

X. Methods of instruction:

The scheduled lectures accompanied with the use of demonstration will constitute the core of the instructional method.

ADS Americans with Disabilities Act) Statement

Any student who is a "qualified individual with a disability" as defined by Section 504 of the Rehabilitation Act and Title II of the ADA, and who will need accommodated services (e.g., note takers, extended test time, audiotape, tutorials, etc.) for this course must register and request services through the Office of Academic Assistance Programs, S-150.

CSD CODE OF STUDENT CONDUCT

LSUE enforces discipline on campus to protect the academic environment of the campus and the health and safety of all members of the University community. To accomplish this objective, the University enforces standards of conduct for its students. Students who violate these standards can be denied membership in the LSUE community through imposition of disciplinary sanctions.

The LSUE Code of Student Conduct can be found on the LSUE website (lsue.edu). Follow the "Current Students" link from the homepage, and then click on "Student Handbook."